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# (12) EUROPEAN PATENT APPLICATION

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(71) Applicant:
**MITSUBISHI DENKI KABUSHIKI KAISHA**
**Tokyo 100 (JP)**

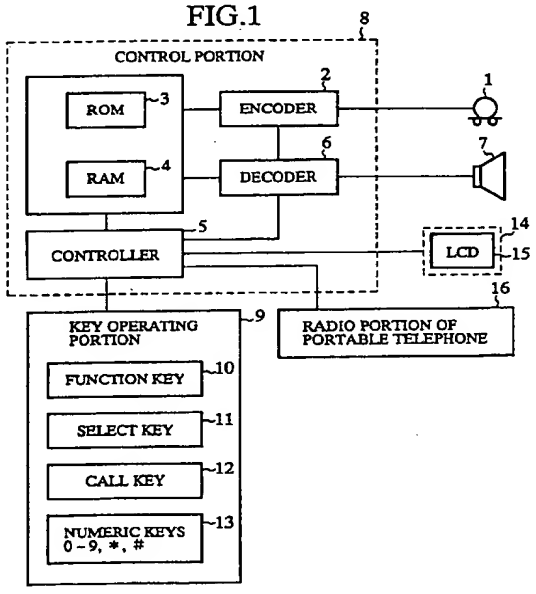
(72) Inventor:
**IWAMI, Akiko,**
**Mitsubishi Denki Kabushiki Kaisha**
**Tokyo 100 (JP)**

(74) Representative:
**Popp, Eugen, Dr. et al**
**MEISSNER, BOLTE & PARTNER**
**Widenmayerstrasse 48**
**80538 München (DE)**

## (54) MOBILE TELEPHONE

(57) An environment where a mobile telephone is smoothly operated is provided by making it possible to record/reproduce the speech of the user in each menu screen to add the speech information to the menu screen. The mobile telephone comprises a memory unit (4) for storing speech data; a microphone (1) and a loudspeaker (7) for inputting/outputting speech; an encoder (2) and a decoder (6) for digital/analog converting the speech; and a key operation unit (9) for recording or reproducing the speech with a first key operation and for determining the input operation by a second key operation to execute the recording or reproduction of the speech. Not only the text information displayed on the display but also the guide using audio message or information can be acquired to reduce the operation mistakes of the user.

FIG.1




EP 0 905 951 A1

## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to a portable telephone having a voice recording and playing back function.

### BACKGROUND ART

**[0002]** Referring to conventional voice recording functions of portable telephones, in many cases, there have been recording methods of only narrow scope. For example, some of them are equipped with only a function for registering telephone numbers by voice. Otherwise, as disclosed in Japanese Patent Laid-open No. Hei 8-32670, one may register names by voice that have been previously registered. Still others are such that they only take memos by voice. Thus, users of portable telephones have been unable to select other methods than those mentioned above.

**[0003]** Japanese Patent Laid-open No. Hei 4-314242 discloses a cordless telephone giving, by voice, notices about the running down of its battery, alarms about its talking range, guides to its various functions, and so on. On the other hand, portable telephones are tending to become more and more multi-functional and, keeping pace with this, users are increasingly operating the portable telephone only according to displays made on the screen.

**[0004]** However, as the operations become complicated, there arises the problem that the user makes similar mistakes again and again before reaching a wanted menu screen because of the small amount of information available from the display (indication) on the screen.

**[0005]** The present invention was made in order to solve the above mentioned problem. Accordingly, it is an object of the invention to provide a portable telephone in which it is made possible to make voice recording of all the menu/memory screens. Further, it is possible, when a menu screen is accessed again, to play back the voice recorded thereat.

**[0006]** It is another object of the invention to provide a portable telephone in which it is possible to instantly reach a desired menu screen only by means of played back voice sounds.

### DISCLOSURE OF INVENTION

**[0007]** The portable telephone according to the invention includes a microphone (1) for receiving a voice input and a speaker (7) for delivering a voice output. The portable telephone has the function of recording and playing back the sound input from the microphone (1) at each of the menu screens. A control portion (8) of the portable telephone comprises an encoder (2) for converting an input signal from the microphone (1) into a digital signal, a memory device (4) for storing converted voice data, a decoder (6) for taking out data from the memory device, converting it into an analog signal, and playing back and outputting the analog signal from the speaker (7). A key operating portion (9) of the portable telephone is adapted to achieve recording or playing back of voice by a first key operation and to determine an input operation and execute recording or playing back of voice by a second key operation. Accordingly, not only character information displayed on the display, but also guides or information by voice messages, can be obtained from the portable telephone. Further, the user can record any message at will as a voice message, and therefore the portable telephone can not only be used for telephoning but also has a potential for various other applications.

### BRIEF DESCRIPTION OF DRAWINGS

**[0008]**

FIG. 1 is a block diagram showing a structure of a portable telephone according to the invention.

FIG. 2 is a flowchart showing a voice recording operation in an embodiment 1.

FIG. 3 is a block diagram showing the storage area of a memory device in the embodiment 1.

FIG. 4 is a flowchart showing a voice playing back operation in the embodiment 1.

FIG. 5 is a flowchart showing a voice recording/playing back operation in an embodiment 2.

FIG. 6 is a block diagram showing the storage area of a memory device in the embodiment 2.

FIG. 7 is a flowchart showing an operating method in an embodiment 3.

FIG. 8 is a flowchart showing an operating method in an embodiment 4.

FIG. 9 is a block diagram showing the storage area of a memory device in the embodiment 4.

FIG. 10 is a flowchart showing a voice recording/playing back operation in an embodiment 5.

FIG. 11 is a block diagram showing the storage area of a memory device in the embodiment 5.

### BEST MODE FOR CARRYING OUT THE INVENTION

**[0009]** An embodiment 1 of the invention will be described with reference to FIG. 1.

**[0010]** A control portion 8 of a portable telephone shown in FIG. 1 comprises a microphone 1 for receiving a voice input, an encoder 2 for converting the input analog signal into a digital signal, a memory device (ROM) 3 storing voice data in advance, a memory device (RAM) 4 for storing new voice data, a controller 5 for controlling these memory devices 3 and 4, a decoder 6 for taking out data from the memory devices 3 and 4 and converting the data into voice data to be played back and output from the speaker 7. A key operating

portion 9 comprises a function key 10, a select key 11, a call key 12, and numeric keys 13 (0 - 9, *, #). A display section 14 is formed from an LCD 15 for displaying characters Reference numeral 16 denotes a radio portion of the portable telephone.

**[0011]** An operating method for recording voice will be described with reference to FIG. 2. First, the function key 10 and the numeric key 13 are used to access a relevant menu screen (step S1). The menu screen is displayed on the LCD 15 (step S2). When the screen at which voice inputting is required has appeared, the function key is depressed for a long time (step S3) by which means the mode is switched to a voice record/playback mode (step S4). The user pushes down the numeric key 13 and the select key 11 to select the recording mode and then, according to the user's needs, records a message at this screen (step S5). The voice is passed through the microphone 1 and the encoder 2 and stored, as voice data, in the memory device 4 (steps S6 and S7).

**[0012]** The structure of the above mentioned memory device 4 is shown in FIG. 3. In the memory device (RAM) 4, there are stored address numbers 4a (0, 1, 2, ...) corresponding to each of the menu (memory) screens and voice data 4b corresponding to each of the address numbers. For example, address numbers 4a are respectively assigned to the SMS (short message services) edit screens and voice data 4b corresponding to these numbers are stored in the corresponding storage areas.

**[0013]** Now, playback of stored voice will be described with reference to FIG. 4. When the same menu (memory) screen has been accessed by using the same method as in the recording of the voice (step S11), the menu (memory) screen is displayed on the LCD 15 (step S12). By pushing down the function key 10 for a long time at this screen (step S13), the mode is switched to the voice record/playback mode (step S14). The user selects "playback" of "playback/record" by depressing the select key 11 (step S15). After the selection has been made, the voice data is taken out from the memory device (RAM) 4 in accordance with the address number in the menu screen at which the mode was switched to the playback mode (step S16). The voice data is converted into an analog signal in the decoder 6 and the voice is output from the speaker 7.

**[0014]** Now, an embodiment 2 will be described with reference to FIG. 5. While a method was described in the embodiment 1 in which each of menu (memory) screens was accessed and voice was recorded by long-time depressing of the function key 10, such operations may be allocated to each of the numeric keys 13. Thus, by depressing the relevant numeric key 13 for a long-time (step S21), the record/playback mode can be switch-selected (step S22).

**[0015]** When recording voice, the user, after selecting the record mode by using the numeric key 13 and select key 11 (step S23), inputs his or her voice by the microphone 1. Then, the voice data 4b is stored in the memory device (RAM) 4,and assigned to the address 4c corresponding to the key number as shown in FIG. 6 (steps S24 and S25). When playing back the voice, the user depresses the numeric key 13 for a long time as above and, after the record/playback mode has been selected, switches the mode to the playback mode (step S23). At this time, the voice data 4b at the address 4c corresponding to the key in question is taken out from the memory device (RAM) 4 (step S26) and, after the data has been converted into an analog signal in the decoder 6, the voice is output from the speaker 7 (step S27).

**[0016]** Now, an embodiment 3 will be described with reference to FIG. 7. In the case of the embodiment 1, when taking out the voice data 4b stored in the memory device (RAM) 4, the voice data 4b was taken out by accessing the menu (memory) screens one after the other. However, as shown in FIG. 7, by pushing down a call key 12 (step S31), the addresses at which the voice data are stored are searched, voice data are taken out by ascending order of the addresses at which the voice data are stored, and the data, after being converted into analog signals in the decoder 6, are played back one after the other from the speaker 7 every time the call key 12 is pushed down (steps S32 and S33).

**[0017]** Here, the method whereby the user calls the screen at which the voice, which is being played back, was recorded will be described. When the user depresses the select key when the voice which is being called is played back (step S34), the menu screen is retrieved from another storage area in accordance with the address corresponding to the menu screen at which the voice was recorded and, after retrieval, it is displayed on the display (step S35). Thus, the method is used also as a shortcut function to a menu (memory) screen.

**[0018]** Further, an embodiment 4 will be described with reference to FIG. 8. In taking out voice data stored in the memory device (RAM) 4, in embodiments 1 - 3, the playback was achieved by pushing down some keys. However, it may also be achieved by means of a timer function. Namely, as shown in FIG. 8, a preset record/playback screen for a timer is displayed and, upon accessing the screen, voice is recorded (steps S41 - S46). The memory device (RAM) 4 has a storage area for timer as shown in FIG. 9, and the voice data 4b is stored at a preset address 4d for timer (step S47). A period of time is set in the timer functions. When the set period of time has elapsed, the timer is actuated (step S48). Then a check is made as to whether the voice data is stored at the address 4d for timer of the storage area for timer in the memory device (RAM) 4. When it is stored therein, the voice is played back from the speaker according to the same method as in the embodiment 1 (step S49).

**[0019]** Further, an embodiment 5 will be described with reference to FIG. 10. In the embodiment 1, a

method in which a user's voice is recorded in each menu/memory screen was described. However voice data already recorded in the ROM 3 may be used instead.

**[0020]** Referring to FIG. 10, steps S51 - S53 are the same as steps S1 - S3 in the embodiment 1. In step S54, the mode is switched to a record/playback mode and this mode is displayed on the LCD 15. At this point of time, the user makes a setting to select either RAM recording to record his or her voice or ROM recording to utilize a message recorded in the ROM, by using a relevant numeric key 13 and the select key 11. When the use of the voice data stored in the ROM is selected (step S55), the voice data stored in the ROM are played back one after the other (step S56). The user, immediately after the relevant message has been played back, depresses the select key 11 and selects the message (step S57). The selected message causes the corresponding ROM message number to be stored in the memory device (RAM) 4 in accordance with the address number in the menu/memory screen switched to the record mode. FIG. 11 shows the storage area in the memory device, in which the selected message number as above is stored in the memory device at the corresponding address. Then, when playing back the voice, the playback mode is selected at each of the menu (memory) screens (step S59). Then, the voice data is taken out from the ROM in accordance with the ROM message number corresponding to the address stored in the memory device (step S60) and the voice is played back (step S61).

**[0021]** In the portable telephone according to the invention, not only character information displayed on the display, but also guides or information by voice messages, can be obtained. Further, since the user can record any message at will as a voice message, the portable telephone can not only be used for telephoning but also has a potential for various other applications.

Industrial Applicability

**[0022]** The portable telephone according to the invention, as described above, provides guides and information by voice messages at each of the menu screens, and therefore it is fit for use by persons with weak eyesight.

## Claims

1. A portable telephone including a microphone (1) for receiving a voice input and a speaker (7) for delivering a voice output, said portable telephone having a function to record and play back the sound input from said microphone (1) at each of menu screens, wherein a control portion (8) of said portable telephone comprises an encoder (2) for converting an input signal from said microphone (1) into a digital signal, a memory device (4) for storing converted voice data, and a decoder (6) for taking out data from said memory device, converting it into an analog signal, and playing back and outputting the analog signal through said speaker (7), and wherein a key operating portion (9) of said portable telephone is adapted to achieve recording or playing back of voice by a first key operation and to determine an input operation and execute recording or playing back of voice by a second key operation.

2. A portable telephone according to claim 1, having a function of recording and playing back an input voice from said microphone (1) in accordance with each numeric key of numeric keys (13) provided in said key operating portion (9).

3. A portable telephone according to claim 1, adapted to play back recorded voices one after the other and allow access to a menu screen at which a voice being played back was recorded.

4. A portable telephone according to claim 1, adapted, by the use of a timer function, to play back a recorded voice when a predetermined period of time has elapsed.

5. A portable telephone according to claim 1, adapted to be selectively switched so as to play back either voice data recorded in a ROM (3) in advance or voice data recorded in a RAM (4).

FIG.1

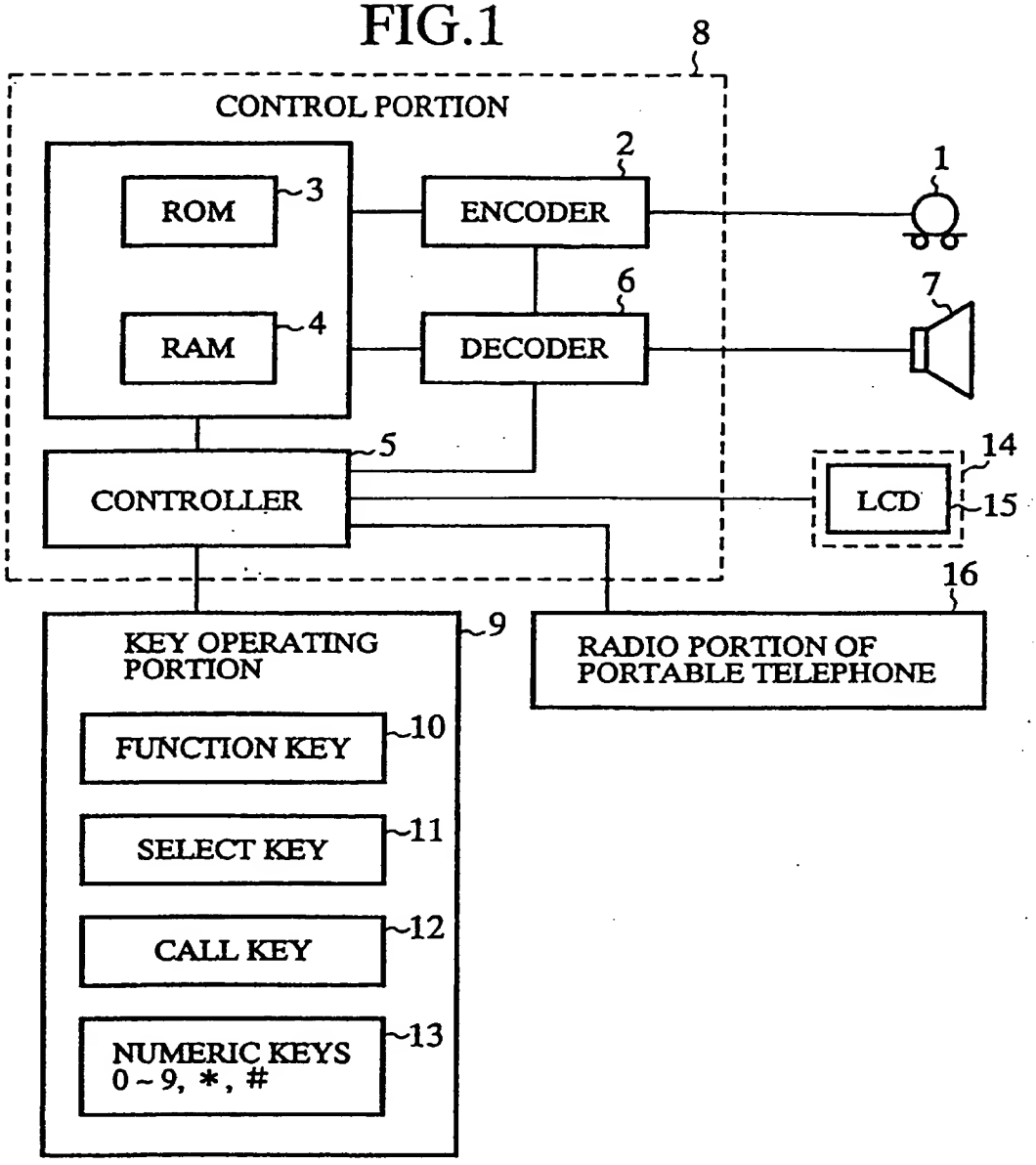


FIG.2

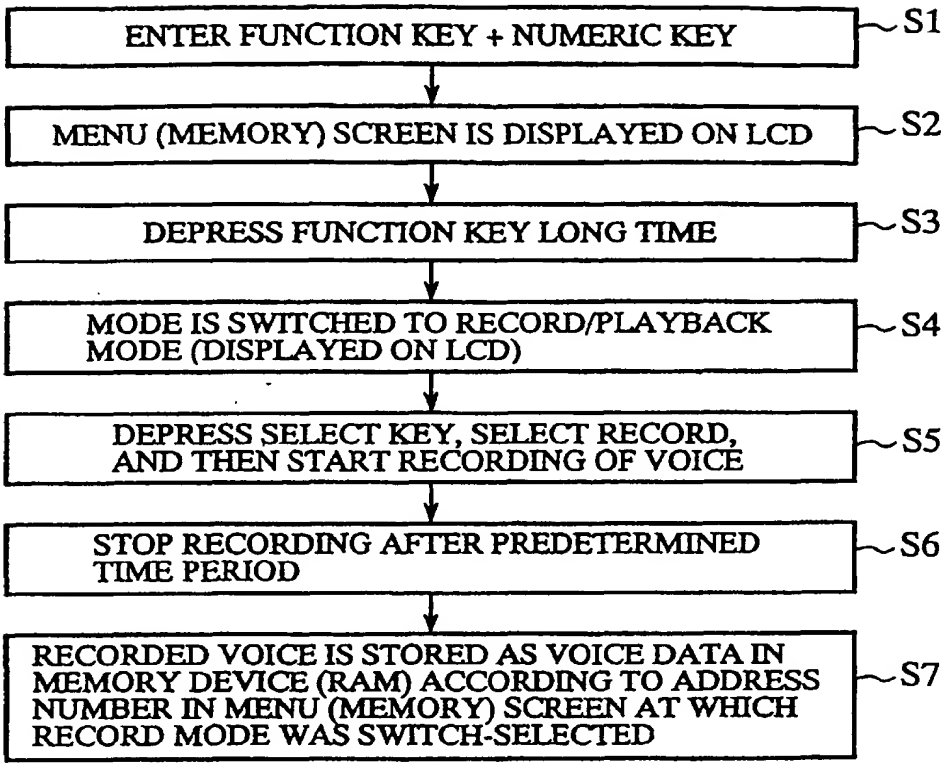



FIG.3

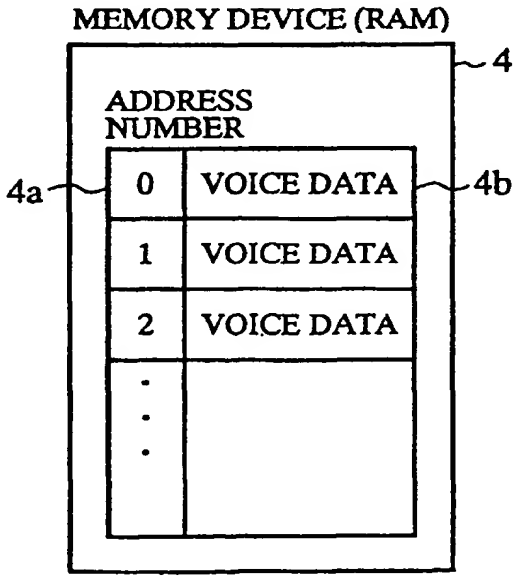


FIG.4

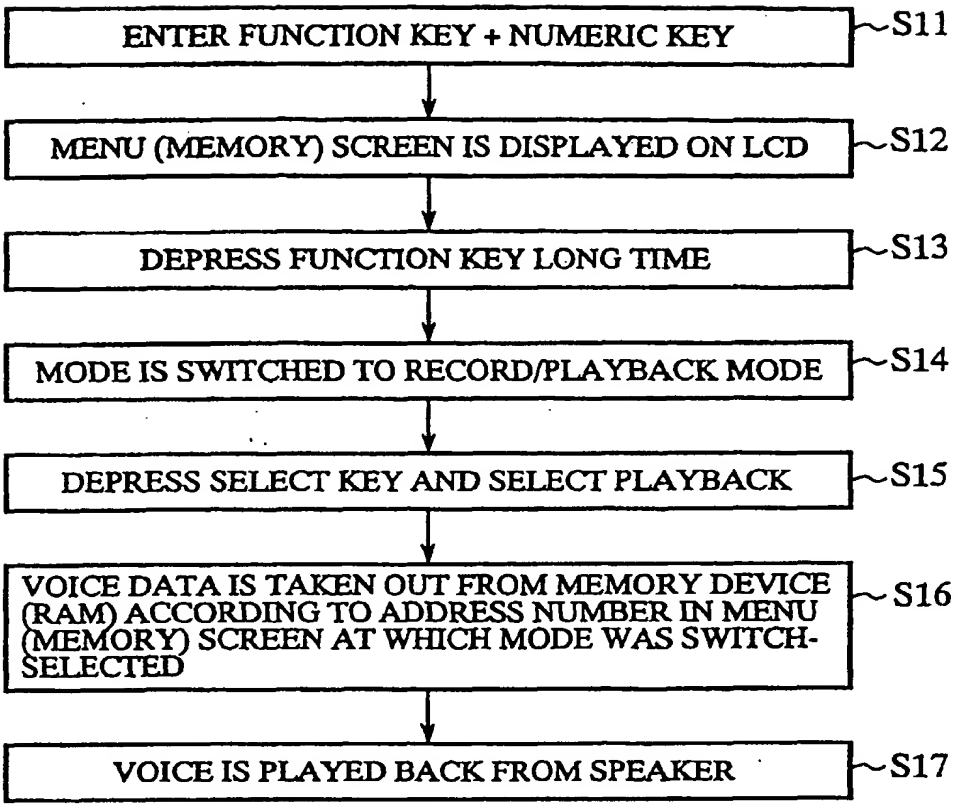


FIG.5

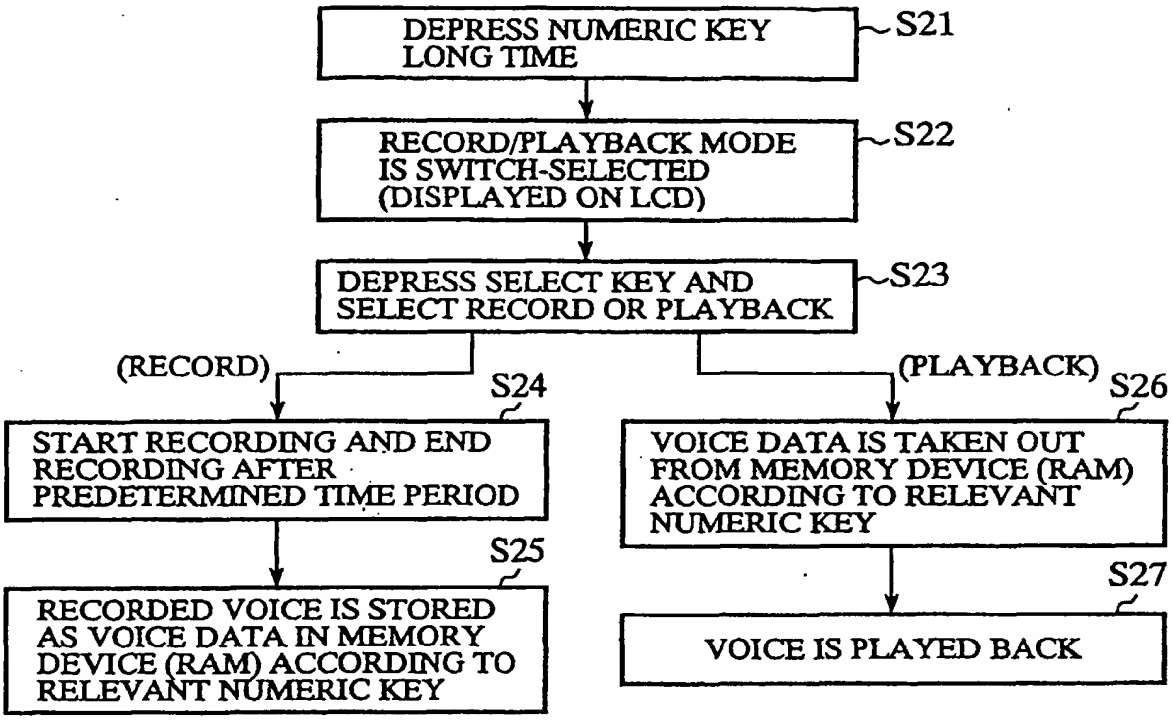



FIG.6

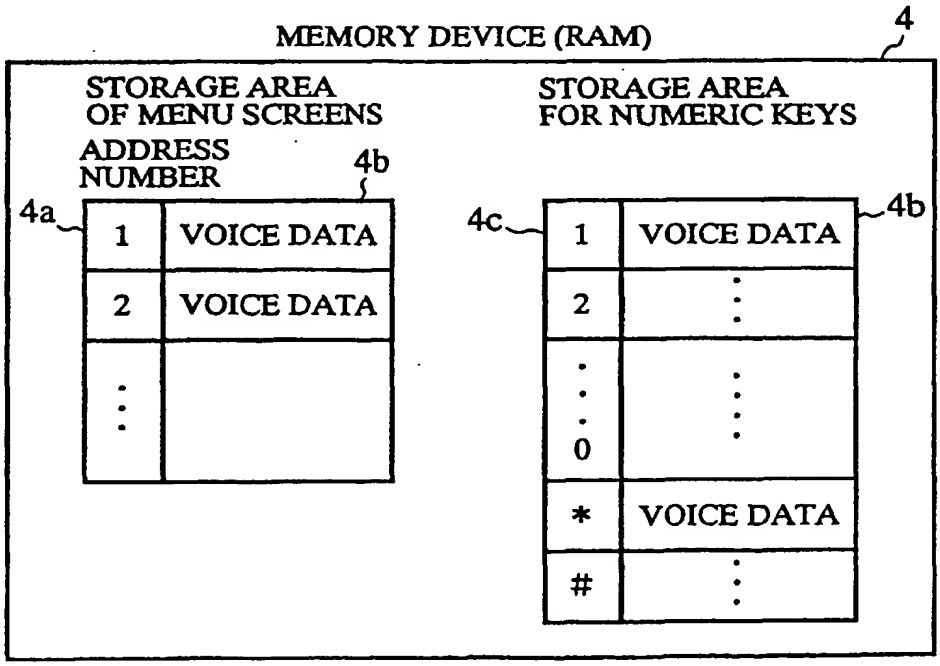


FIG.7

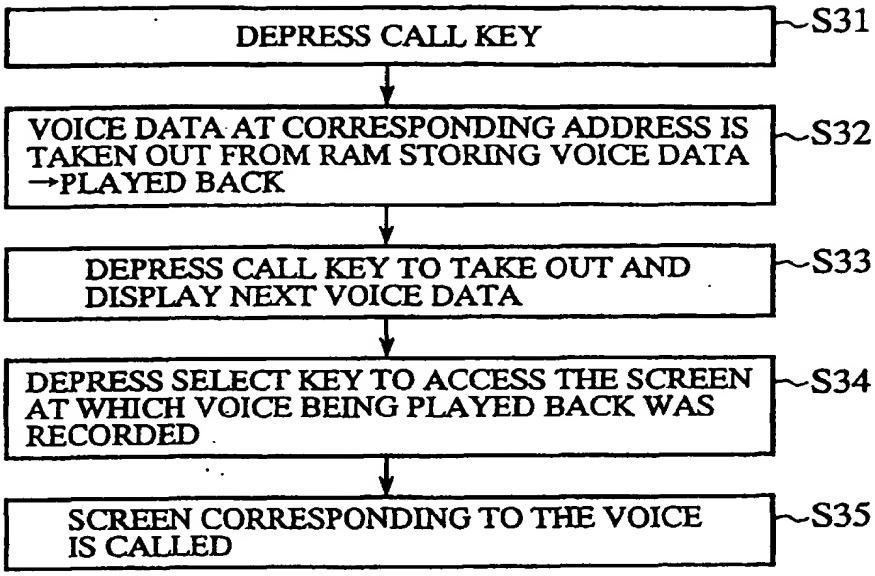



FIG.8

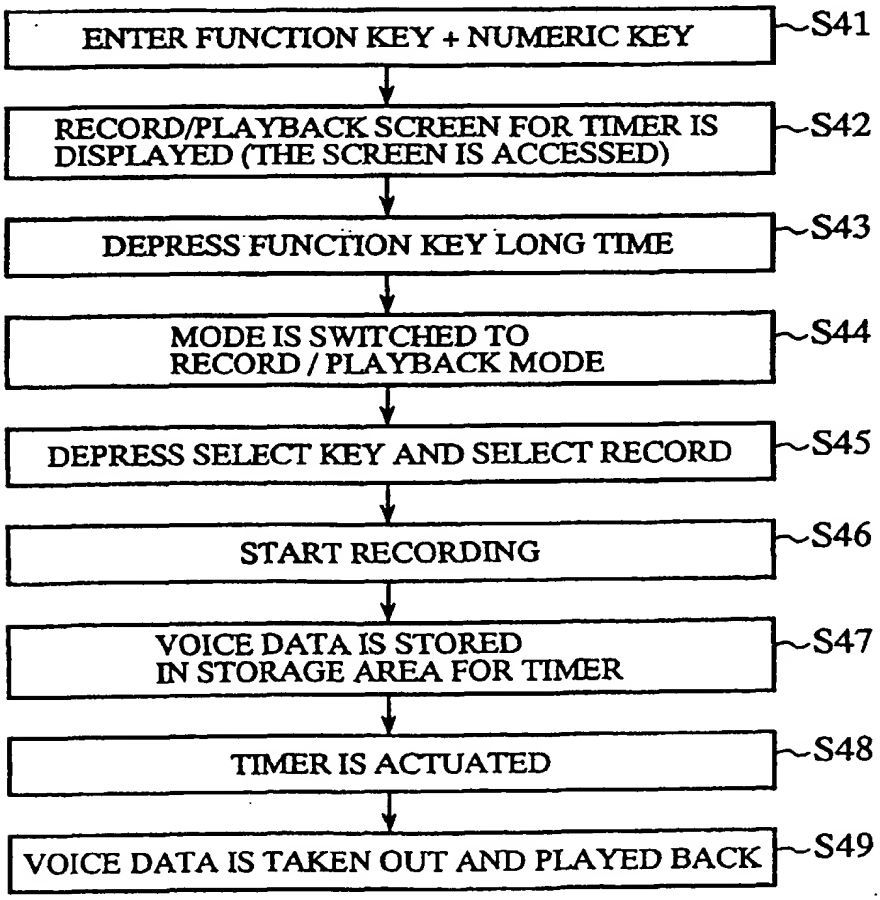


FIG.9

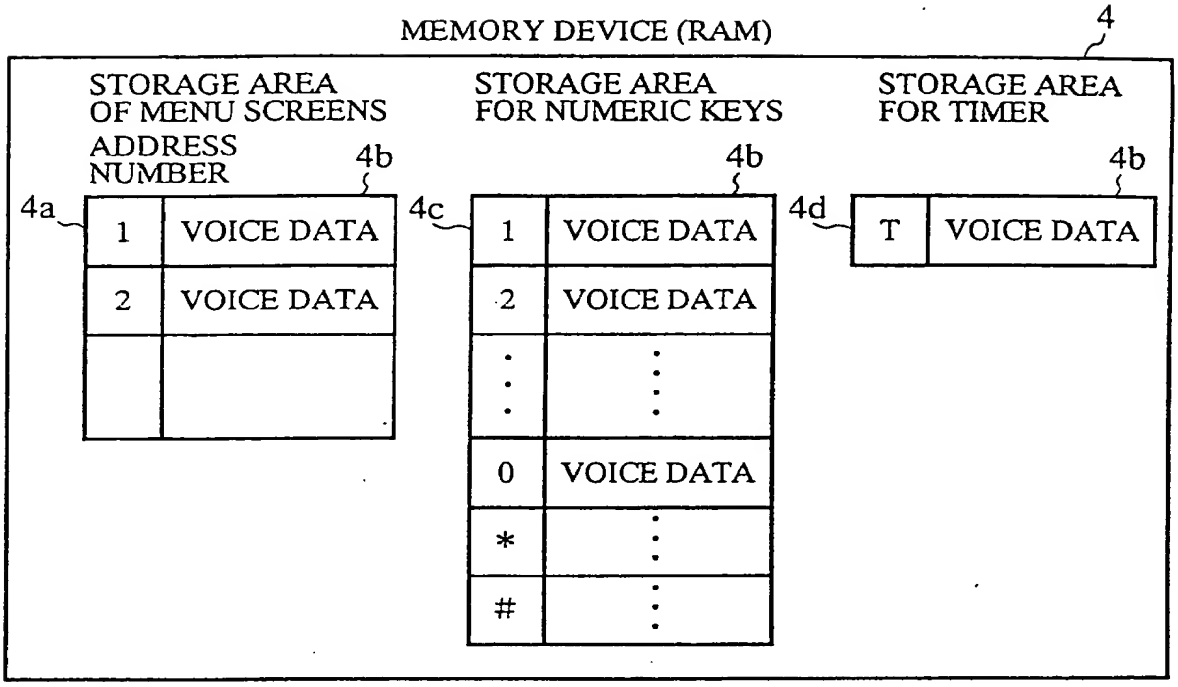



FIG.11

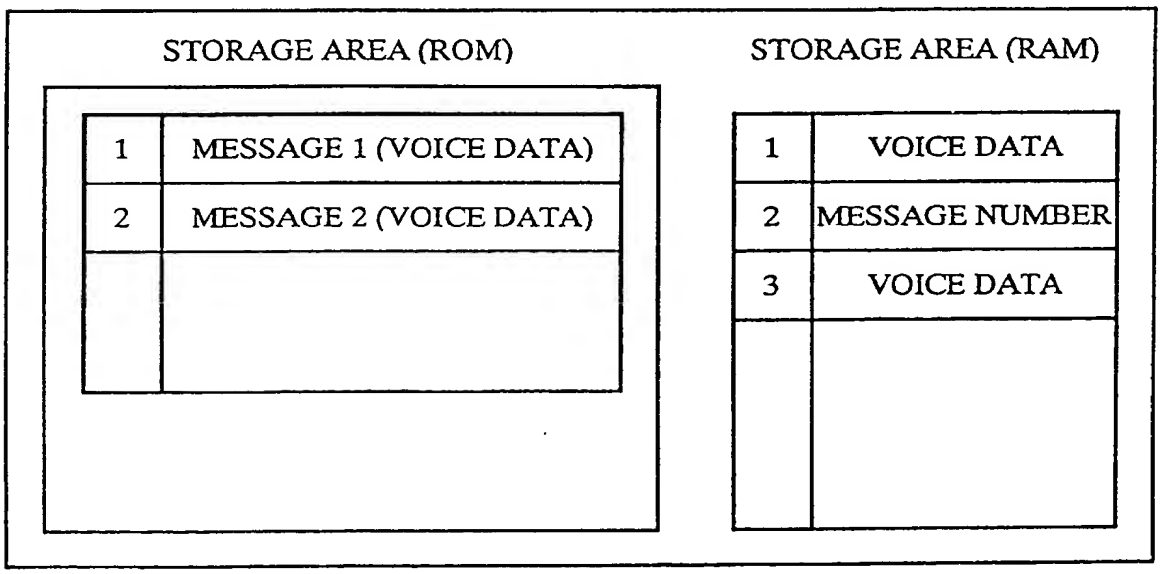
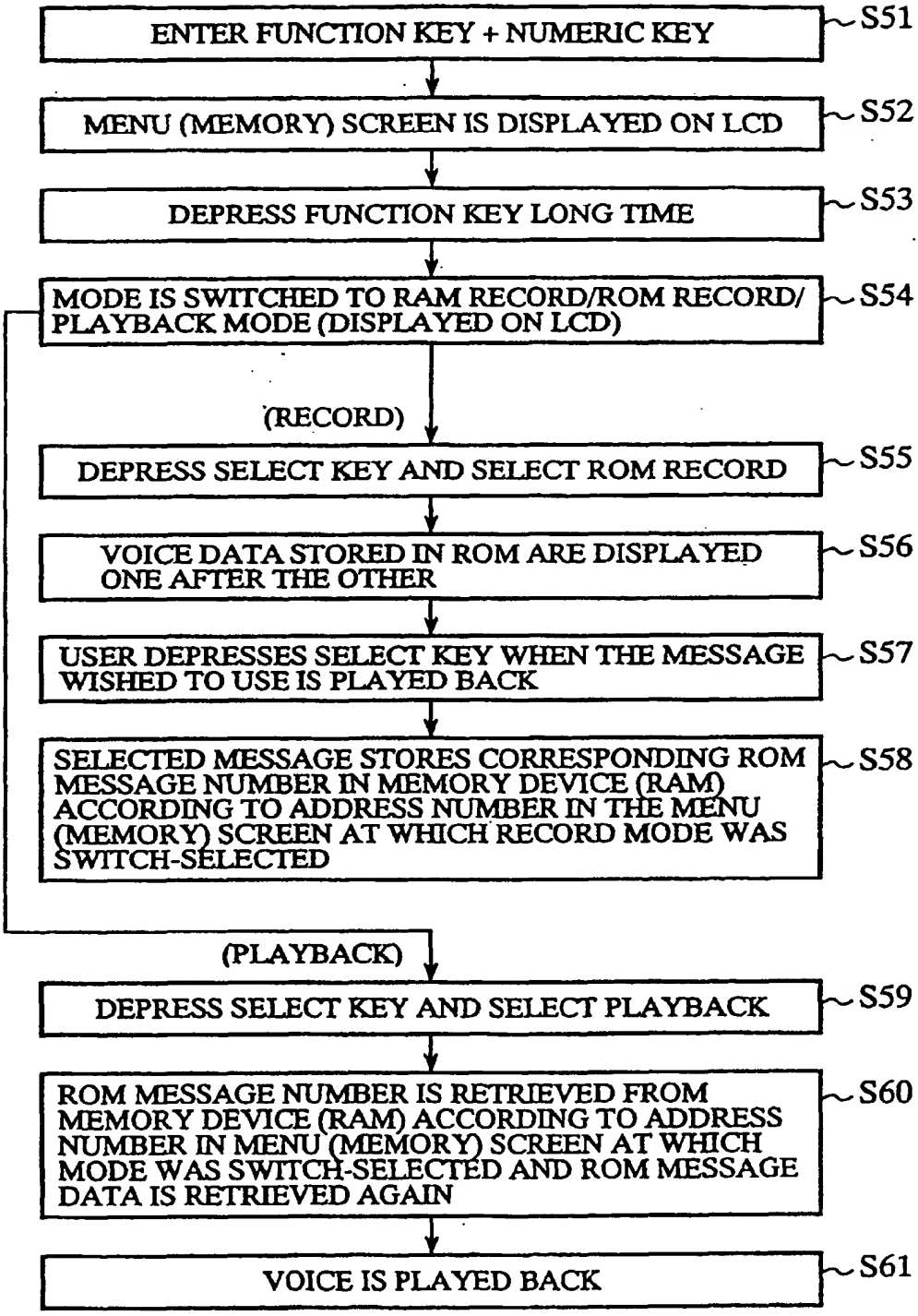


FIG.10



# INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP97/00862

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl$^6$ H04M1/00, 11/00, H04B7/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int. Cl$^6$ H04M1/00, 11/00, H04B7/26, G06F3/14-3/16

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1926 - 1996 Jitsuyo Shinan Toroku Koho 1996 - 1997
Kokai Jitsuyo Shinan Koho 1971 - 1997
Toroku Jitsuyo Shinan Koho 1994 - 1997

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | JP, 8-272572, A (Mitsubishi Electric Corp.), October 18, 1996 (18. 10. 96), Column 6, lines 19 to 30 (Family: none) | 1 - 5 |
| Y | JP, 4-36631, U (Oki Electric Industry Co., Ltd.), March 27, 1992 (27. 03. 92) (Family: none) | 1 - 5 |
| Y | JP, 5-74043, A (Sony Corp.), March 26, 1993 (26. 03. 93), Column 3, lines 9 to 34; column 4, lines 2 to 18 (Family: none) | 1 - 5 |
| Y | JP, 4-344917, A (Sanyo Electric Co., Ltd.), December 1, 1992 (01. 12. 92) (Family: none) | 2 |
| Y | JP, 2-252055, A (Toshiba Corp.), October 9, 1990 (09. 10. 90), Page 4, lower right column, line 2 to page 5, upper left column, line 1 (Family: none) | 3 |

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| June 5, 1997 (05. 06. 97) | June 17, 1997 (17. 06. 97) |
| Name and mailing address of the ISA/ Japanese Patent Office | Authorized officer |
| Facsimile No. | Telephone No. |

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP97/00862

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | JP, 5-53705, A (K.K. Denno Shokai), March 5, 1993 (05. 03. 93), Column 2, lines 36 to 42 (Family: none) | 4 |
| Y | JP, 2-161697, A (NEC Corp.), June 21, 1990 (21. 06. 90) (Family: none) | 5 |

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

FIG.1

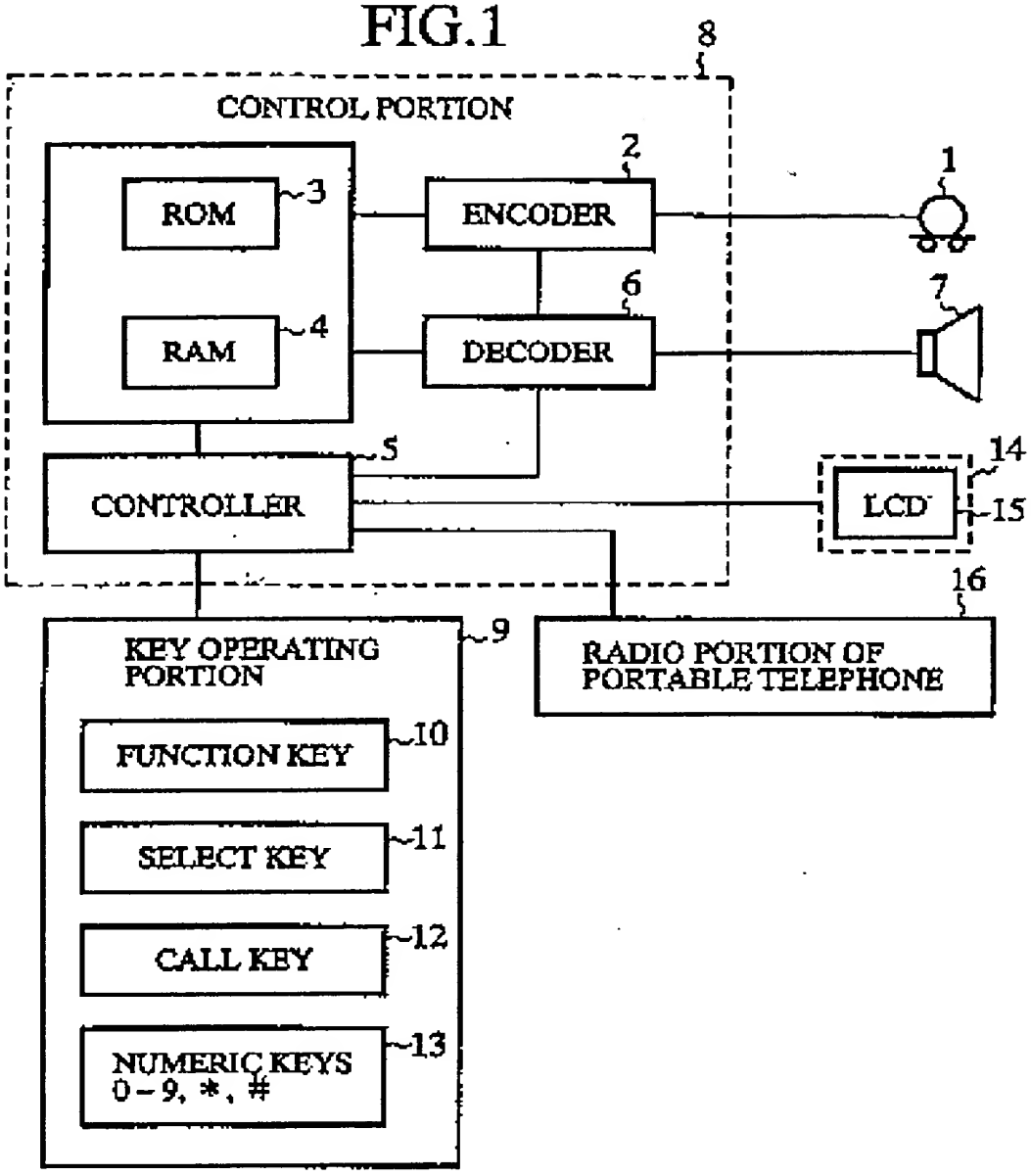


FIG.2

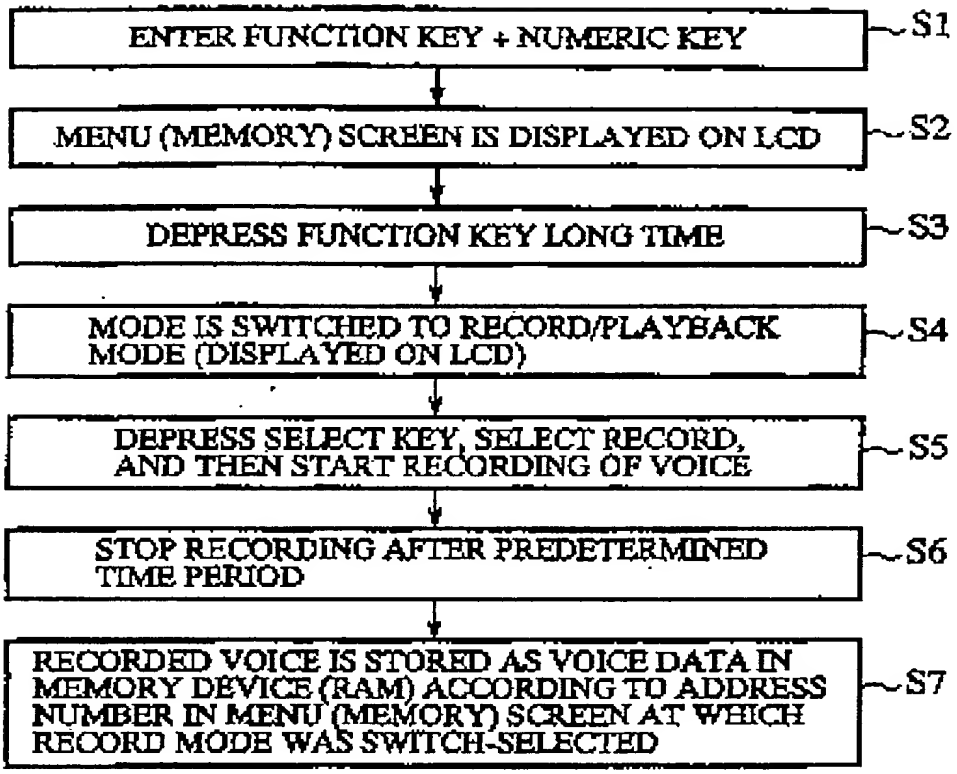



FIG.3

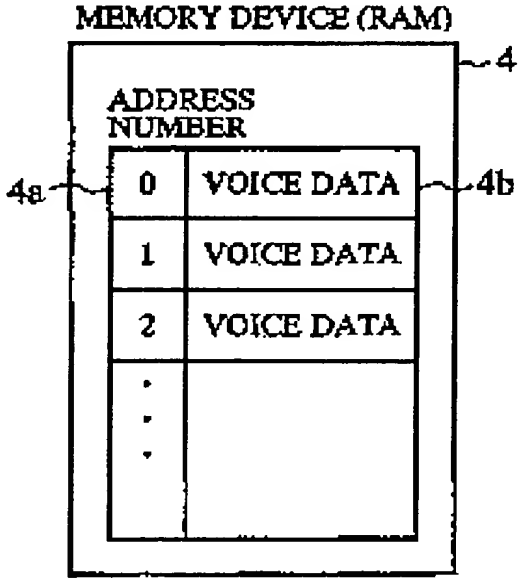


FIG.4

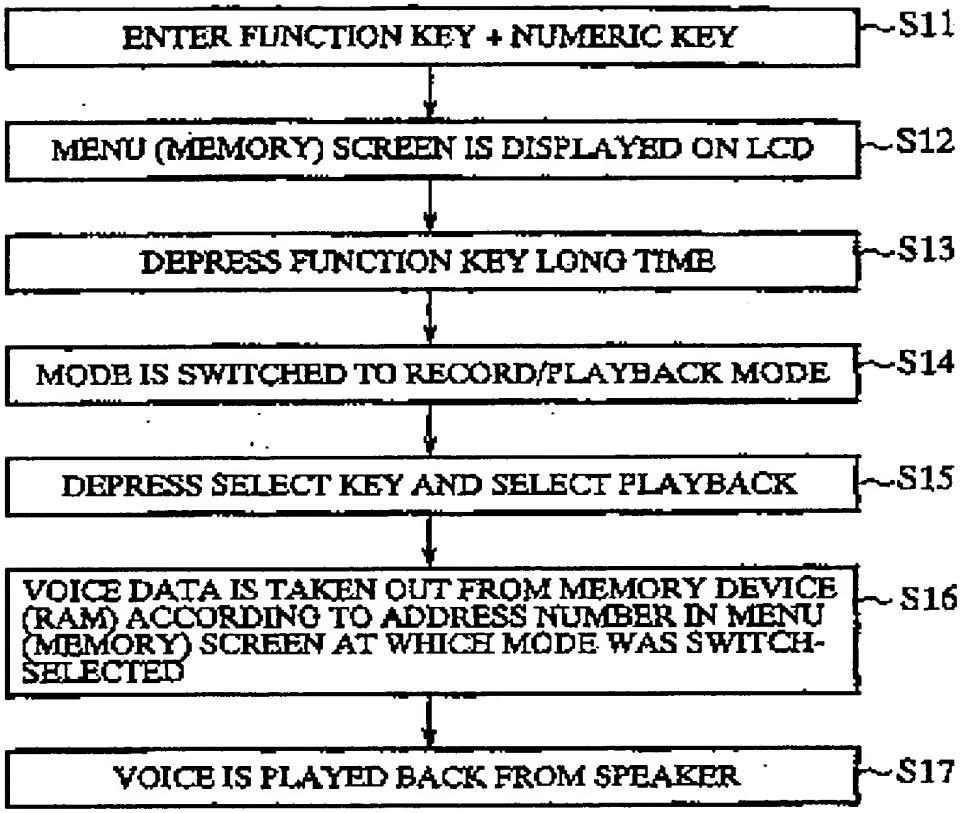


FIG.5

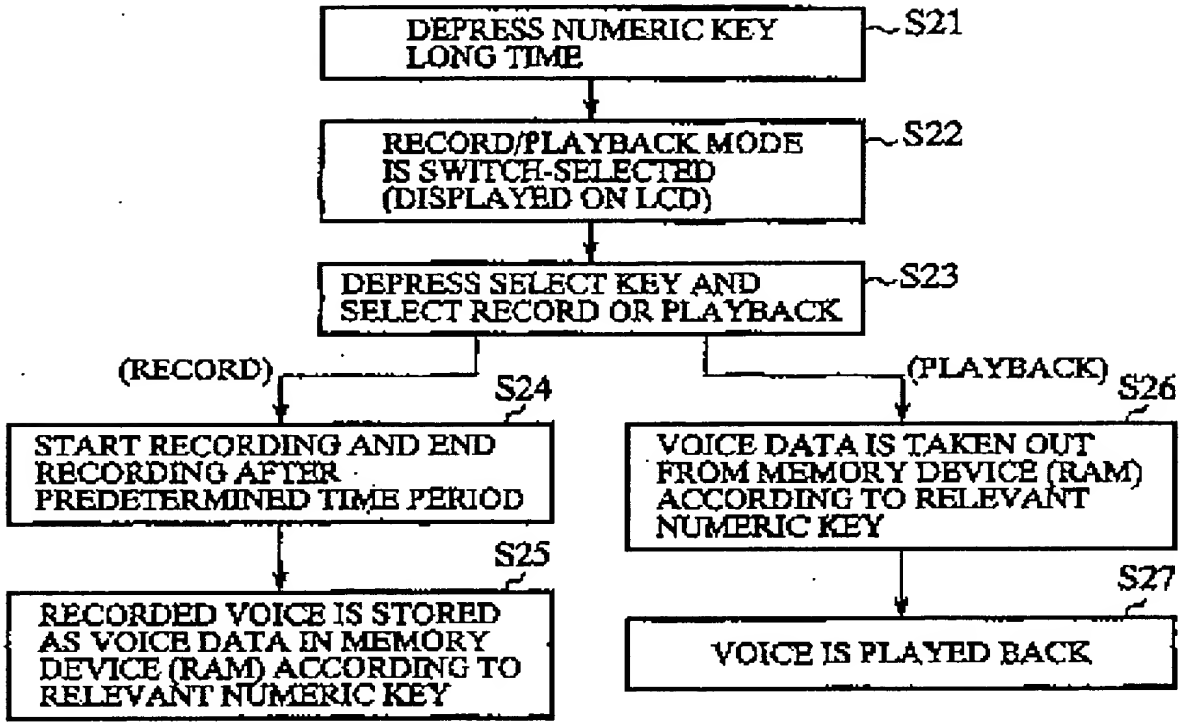



FIG.6

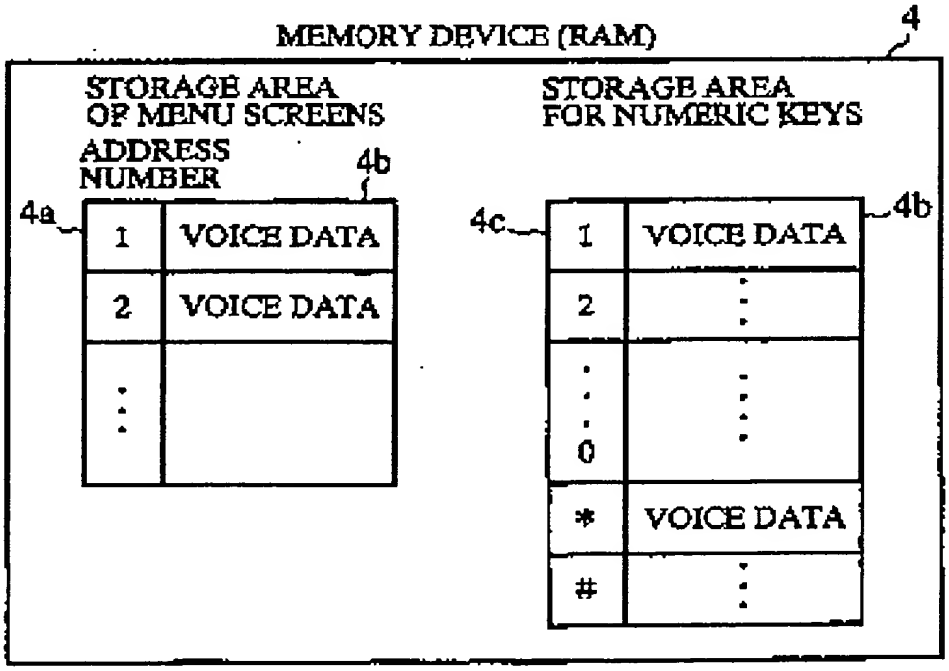


FIG.7

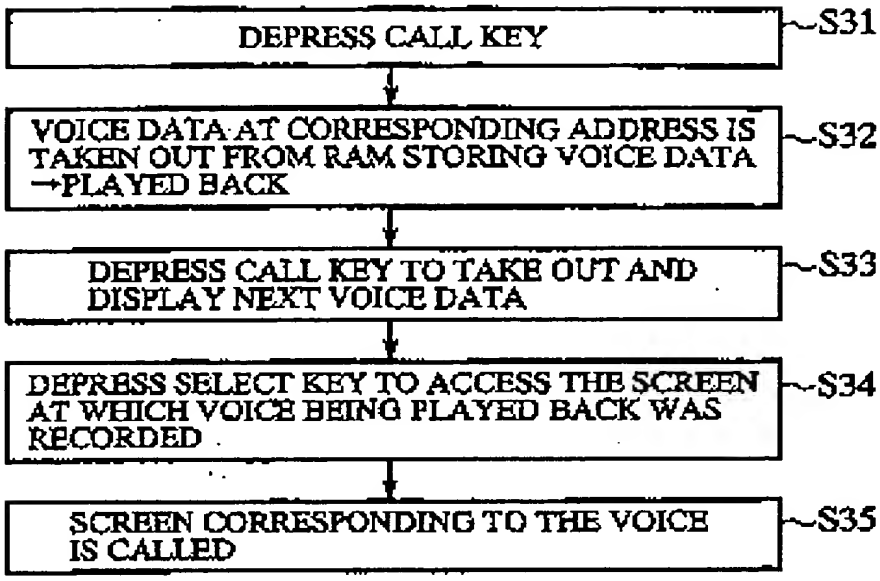



FIG.8

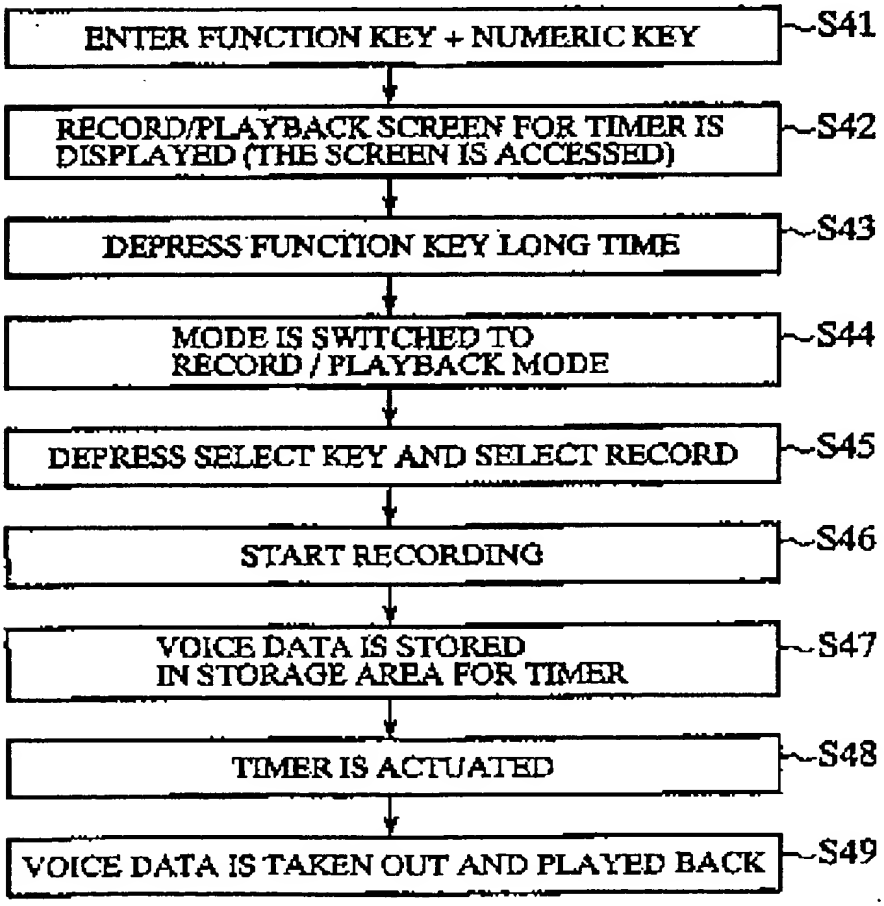


FIG.9

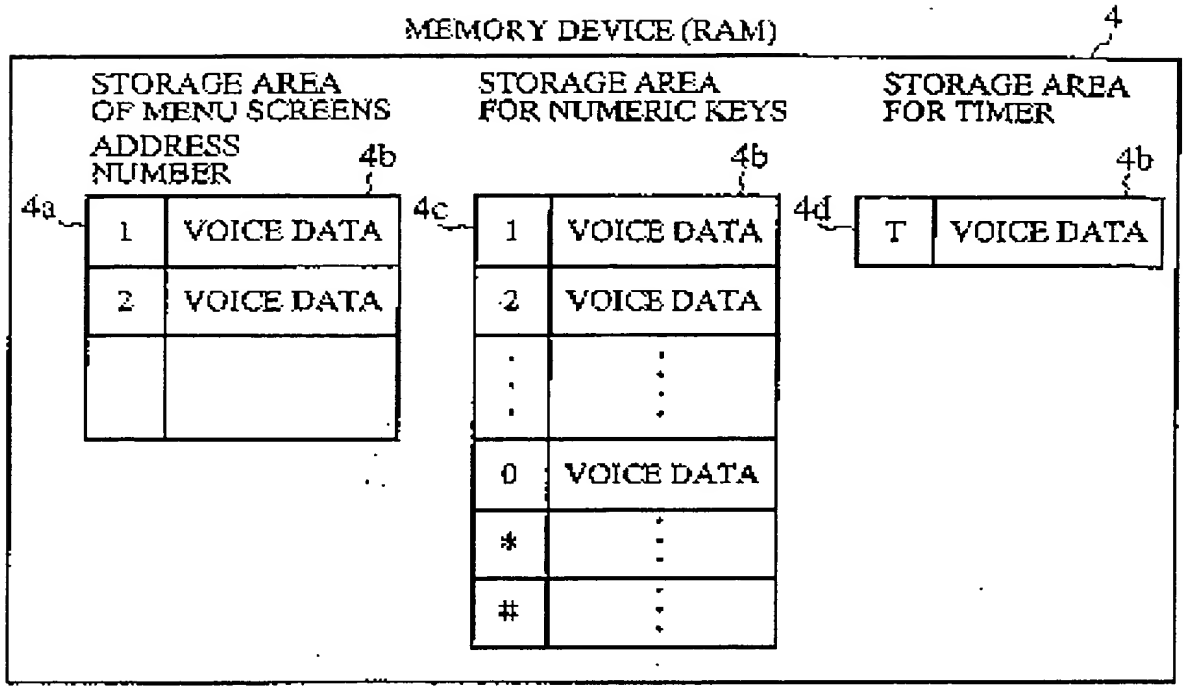



FIG.11

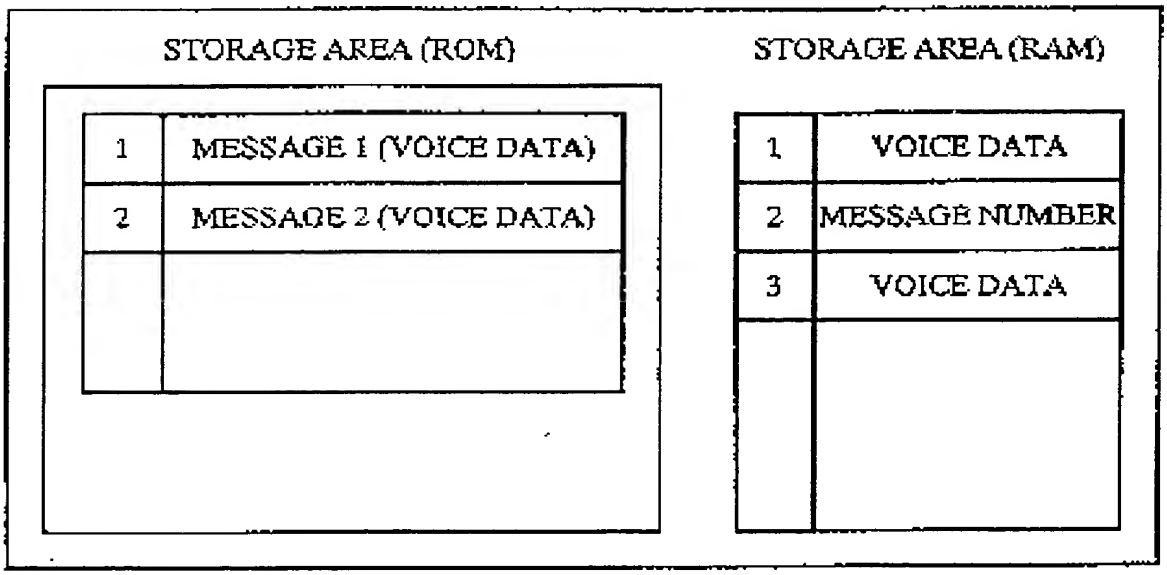


FIG.10